Fiscal Year 1986
Annual Report of the Epidemiology, Demography, and Biometry Program

National Institute on Aging

(4)

Report

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Overview of Epidemiology, Demography, and Biometry Program
National Institute on Aging

The EDB Program has entered into a second phase of development (Figure 1). The original plan of the Program described in a previous publication clearly stated our interest to "learn as much as possible about what makes successful aging" (Brody, J.A. and Cornoni-Huntley, J.C., Research Epidemiology as a Growth Industry at the National Institute on Aging. Public Health Reports. 1981). At that time there was an obvious need for "community diagnosis and health surveillance." The community in this case is the elderly population which has been generally defined as persons 65 years of age and older. We recognize that community diagnosis includes investigations of distributions of health status of the elderly and the determinants of these distributions. This is the basic function of epidemiology. To accomplish this work we needed epidemiologists, biostatisticians, and social scientists to initiate population surveys and community studies. The ultimate goals of these projects were consistent with the mission of NIA and the mandate of the EDB Program. The specific aims were to monitor the health conditions of the elderly living in communities and to describe distributions and trends of mortality, morbidity, impairment, hospitalization, and institutionalization and to relate these to the determining factors. These aims took the form of a population survey and several community studies as well as the development of a demographic predictive model. These studies are currently in various stages of development.

I. Community Diagnosis and Health Surveillance (Phase I)

A. Population Survey

The National Health and Nutrition Examination Survey-Epidemiologic Followup and Continued Followup represents the first health study of a cohort of the U.S. population. The sample includes 14,407 participants in the NHANES I who at the time of that survey were 25 to 74 years of age. The purpose of this survey is to investigate the relationship of baseline (NHANES I), physiological, nutritional, social, psychological, and demographic factors to subsequent morbidity and mortality for specific conditions.

B. Community Studies

1. Established Populations for Epidemiologic Studies of the Elderly (EPESE)

The EPESE Project is a longitudinal study providing continual surveillance of representative community populations. The goals are: a. to identify predictors of mortality, hospitalization, and admission to

Figure 1

DEVELOPMENT AND PROGRESSION OF THE EDB PROGRAM

	PHASE I			PHASE II			PHASE III	
COMMUNITY DIAGNOSIS AND HEALTH SURVEILLANCE	Descriptive	{ Population Survey { Community Studies { Demographic Models	HYPOTHESIS GENERATING	Analytical	{ Problem - Oriented Studies { Family Studies { Field Studies { Comparative International Studies	Inter-correlated	{ Healthy Elderly Studies { Aging Process Studies { Cohort Effect Studies	

long-term care facilities and to study associated factors for chronic diseases, disabilities, and impairments in the elderly; b. to produce estimates of prevalence and incidence of chronic conditions, impairments, and disabilities with associated risk factors and to quantify the changes of these conditions; and, c. to compare these findings between the four communities where the EPESE studies are located (East Boston, Massachusetts; New Haven, Connecticut; Iowa and Washington Counties, Iowa; and five counties in the Durham, North Carolina area).

2. Framingham Dementia Study

The Framingham Dementia Study is a three-way collaboration involving NIA, Boston University, and NHLBI. The central objective of this study is to identify and classify cases of dementia in a study cohort, to examine patterns and predictors of progression, and to seek risk factors for Alzheimer disease and multi-infarct dementia.

3. Last Days of Life

This is a descriptive study of approximately 1,100 deaths sampled from among all deaths occurring over a period of one year in Fairfield County, Connecticut. Information is collected by interview of a surviving family member or friend and by review of selected records with a focus on transitions (home to hospital, hospital to nursing home, etc.), socio-demographic factors, pain and its treatment, medical diagnosis, physical and cognitive functioning during the final year of life, selected health care expenditures, and lifetime prevalence information for selected conditions. (Brock, Foley, 1985).

C. Demographic Models

The Macroeconomic Demographic Model (MDM) is a complex, mathematical, computerized description of the relationship between several economic, health, and demographic variables for the nation. The purpose is to estimate levels and distributions of health expenditures in the future and to analyze possible effects of government policy. At the core of the MDM are five component models of income (social security, private pension systems, the public employee pension system, supplementary security income program, and the medicare system for payment of hospital and medical bills) as well as a population projection system, a labor market model, and a macroeconomic growth model.

These descriptive studies have provided and will continue to provide the underlying statistics on which to build the problem-oriented studies. For example, the first publications and presentations have presented descriptive statistics such as prevalence and incidence of the major health conditions and impairments of the elderly and the trends and changes in these conditions. A paper describing the rates of nursing home admissions in each of the locations of the EPESE projects was given at the 19th Annual Meeting of the Society for Epidemiologic Research in June 1986. At the same meeting a paper was presented comparing rates of physical functioning at baseline and change in these rates for each of the EPESE locations. Distributions of the use of medications in the Iowa 65+ Rural Health Study, EPESE will appear this year in the Journal of the American Geriatrics Society.

These studies have provided a foundation for the progression of epidemiologic research.

II. Hyothesis Generating (Phase II)

Studies are now becoming more oriented toward analytical approaches. Hypotheses generated studies with well-framed scientific questions initiated from not only the descriptive results but also from the close exposure to the observational methods of these epidemiologic studies are being completed (Phase II). At the American Public Health Association Meetings, 1986 and at the American Geriatric Society Meetings, 1986, problem-oriented analyses of the EPESE and NHANES Followup will be presented.

A. Problem-Oriented Studies

The population survey (NHANES Followup) and the community studies (EPESE, Framingham, and Last Days of Life) offer unlimited opportunity for analytical studies of the existing accumulated data as well as the initiation of problem-oriented studies based on the information from the prevalence surveys and the continued followup of the populations. The EPESE, in particular, provides data on a large sample, designed to investigate the the onset of major problems of the elderly population. The NHANES Followup provides a strong baseline clinical examination with laboratory findings and medical history linked with an assessment of outcome and episodes of hospitalizations for a representative sample of the United States population. The Framingham sample provides a wealth of meticulously acquired clinical and medical information collected for more than 30 years on the same individuals. These studies will provide information for answering questions on patterns and predictors of the use of health care facilities such as, what are the predictors of long-term care placement and the patterns of multiple hospitalizations. Initial studies have shown that disability is as strong a predictor of mortality

as age and sex (Brock, D.B., Multicenter longitudinal studies of functional disability and 2-year mortality among community elderly). In-depth analysis of identifying the factors creating this relationship are currently being completed. Preliminary analyses suggest that possibly older persons with blood pressure in the lowest quartile will experience higher rates of mortality than those with pressures in the middle range. In-depth analysis of this question and related factors have a high priority. Methodological work is being completed on the meaning of impaired functional ability and the ability to assess physical functioning. Other studies including the correlates of conditions such as cognitive functioning, depression, and diabetes and the impact of risk factors such as smoking, medication use, and social networks or social support on conditions and health care utilization are underway.

B. Family Studies

Family studies should be included in the second phase of development of the EDB Program. Family history of coronary heart disease, hypertension, cancer, and diabetes have been shown to be strong predictors of the onset of the disease in successive generations. The relationship is questionable for other diseases including many health conditions of the elderly population such as Alzheimer disease and osteoporosis. Also, the identification of family constellations can contribute to studying the influence of social networks on recovery from illness, bereavement, changes in physical functioning, and other problems of the elderly. For example, within the EPESE study, a retrospective design comparing physical functioning within different family structures would be a unique study.

C. Field Studies

Field studies would allow "shoeleather" epidemiology, the facility for EDB staff members to carry out their own research within either local facilities or at field stations in other areas. This technique has been used by other epidemiologic programs at NIH. With the limit on available contract funds this may allow the Program to generate new epidemiologic research by a more efficient and less costly approach. Local studies could be done at health care facilities, nursing homes and ambulatory care facilities. The development of assessment instruments and the evaluation of these instruments could be done with samples of elderly persons either in outpatient facilities or nursing homes in the local area where there is a concentration of elderly people with the necessary variation in possible related characteristics. Field stations should be developed in places offering particular advantages related to their function. For example, it would be advantageous to have a

field station in a place where major data collection is being carried on or where a library of related epidemiologic data is archived. However, field stations should serve more than the EDB Program. These stations should offer opportunities for NIA researchers and staff throughout the Institute. They would, therefore, be most advantageous if established at the NIA Director's level.

III. Intercorrelated Studies (Phase III)

Research on the health status of the elderly encompasses more than studies concentrated on specific health conditions. Health problems are interrelated with social, psychological, and economic problems. The EDB Program is moving toward studying the complex of health in the elderly.

A. Healthy Elderly Studies

We recognize that at a minimum intercorrelated studies must involve the impact of multiple factors within the areas of physical functioning, cognitive functioning, and social functioning. It is in this context that the studies of the aging process, the healthy elderly, and the differences in birth cohorts are being planned. The question of why some persons survive to the oldest old ages with little or no current conditions (the healthy elderly) in the absence or presence of many of the identified risk factors for the leading causes of death is unanswered. The analytical approaches for studying this phenomenon are difficult. Definitions of "healthy" are not established. Statistical and epidemiologic methodology needs to be adapted to the level of complication required for these multidimensional analyses. Unique and imaginative designs must be generated to untangle the interacting influences of numerous factors.

B. Aging Process Studies

The application of epidemiologic methods to studying the aging process is new and exciting. The aging process must be considered for different populations or subpopulations and the determinants of differing processes should be evaluated. Is the aging process different for various ethnic groups or birth cohorts, for groups exposed to or experiencing diverse environmental exposures? What underlying factors can be identified for these differences? These questions assist in clarifying the tasks to be undertaken by epidemiologists, statisticians, sociologists, psychologists, and economists.

C. Cohort Effect Studies

The design of the intercorrelated or multi-aspect studies involve not only multiple variables and several disciplines but also are themselves overlapping investigations. The group considered the "healthy elderly" may be the result or heavily influenced by the fact of belonging to a particular birth cohort. Investigations must be completed on the effect of differences in the mortality and incidence of specific diseases of persons born at different years. Environmental, social, health preventive measures, and ability of health care and medical technology may impact so greatly on the cohorts passing through time that our ability to extrapolate from studies of today's elders to the next generation may be limited.

The EDB Program is passing through the initial phase of quantifying the health problems of the elderly and learning about determining factors and at the same time establishing a foundation, and formulating hypotheses, and completing analytical studies to answer well-delineated questions. At the same time the Program looks forward to unravelling the complex, intercorrelated phenomenon such as the aging process.

EPIDEMIOLOGY OFFICE

Epidemiology Office staff members work with the Acting Associate Director, other EDB Program staff members, other members of the NIA, EPESE contractors, and with other investigators at the NIH, the NCHS and elsewhere on a variety of analytic, developmental, methodologic,and administrative projects.

The NHANES I EPIDEMIOLOGIC FOLLOWUP STUDY (Y01-AG-9-0010) has been described in previous sourcebooks and annual reports. The population of the followup study includes 14,407 persons who were aged 25 to 74 at the time of their initial NHANES I examinations, with approximately 5,500 being 55 or older at that time. The followup survey, initiated by the EDB Program, NIA, in cooperation with the NCHS, has been partially supported by funds from several other of the Institutes of the NIH. The followup interval was approximately 10 years. Many investigators from the organizations which contributed funding are currently analyzing these data, many more analyses are planned, and some studies are already complete (including work done by NIA personnel at the GRC in Baltimore). The study is widely recognized as an extraordinarily valuable resource for epidemiologic research involving many aspects of health. A third phase phase of the data gathering, annual (for older subjects) or biennial telephone contacts to ascertain interim events and changes, has begun. Continued ascertainment of health events by interview is being supplemented with information from hospital, nursing home, and death records.

Dr. Cornoni-Huntley has arranged for publication of a book (co-editors J. Feldman and R. Huntley) which will describe the NHANES I EPIDEMIOLOGIC FOLLOWUP STUDY, and will include analyses related to hypertension, coronary heart disease, stroke, cancer, arthritis, nutrition and dietary patterns, physical disability, alcohol, and demographic aspects. Most chapters are expected to be ready for review at the end of FY86 or early in FY87. In addition to Dr. Cornoni-Huntley, the other NIA staff members who are involved in preparation of chapters are Mr. Foley, Mr. Everett, Ms. Losonczy, Dr. White, and Dr. Williams.

Epidemiology Office staff members are involved with a variety of other projects utilizing the NHANES FOLLOWUP data set, including:

> Dr. Farmer is responsible for a study of possible risk factors associated with the occurrence of hip fracture. As expected, the factor most strongly associated with increased risk was age, while greater weight and greater muscle mass (calculated arm muscle area) were protective. No association with estimated dietary calcium intake has been found. Other potential risk factors are currently being examined.
>
> Dr. Guralnik has completed a study of risk factors associated with pressure sores occurring in 113 NHANES I participants. Cases were identified by the use of hospital and nursing home records, death certificates, and information from the followup interview. The characteristics present at the initial examination which were

associated with an increased risk for the development of pressure sores were low self-assessed health, low level of physical activity, smoking, a neurologic abnormality identified at examination, dry or scaling skin, and anemia.

Dr. White and Ms. Losonczy are carrying out an analysis of cerebrovascular disease among participants in the NHANES I Epidemiologic Followup Study, with the initial phases to be completed in September 1986. Approximately 60 cases of hemorrhagic stroke and 190 cases of thrombotic stroke have been identified on the basis of hospital and/or death records. Patterns of survival and subsequent disability are currently under study. Two other related diagnostic categories, transient ischemic attack, and ill-defined cerebrovascular disease are also being investigated. Initial approaches to the examination of possible predictors of stroke are focused upon hypertension, smoking, obesity, heart disease, alcohol intake, and hematocrit or hemoglobin level, as well as age, sex and race. Later analyses will include a search for other factors of possible pathogenic relevance.

An investigation of patterns, correlates, and predictors of blood pressure is being carried out by Dr. Cornoni-Huntley and other EDB Program staff members. The distributions of blood pressure measurements and changes in these measures over the 10-year followup interval will be described for persons grouped by age up to 85 years. Additional analyses will include an assessment of the changing predictability of blood pressure with advancing age.

Dr. Guralnik is currently working collaboratively with investigators at the NCHS on a study of the prevalence of urinary incontinence and factors associated with severity of incontinence.

A study of the correlates and predictors of body mass and obesity is underway under the direction of Dr. Cornoni-Huntley. These analyses also address the relationship between mortality and obesity or low weight. Consistent with previous findings, relative risks of mortality for the elderly are highest for the highest 15 percent of the weight distribution and lowest for the middle range. Dr. Miles, who joined the Epidemiology Office staff in July 1986, has begun analyses of anthropometric indicators of body composition in the NHANES I AND NHANES II participants with a special emphasis on the correlates and distributions of these among healthy black and white elderly. A specific objective is the development of reference standards for calculated arm muscle area (AMA; an indicator of lean body mass) and skinfold thickness (an indicator of body fat), derived from data for persons free of evidence of major chronic illnesses. Preliminary multivariate analyses of the correlates of AMA (done collaboratively with Ms Losonczy and Dr. White), indicated little influence directly attributable to race, but clear correlations with other body measures, prominently including weight.

> Mr. Everett and Dr. Cornoni-Huntley are collaborating on an analysis with Drs. Kim and Hadley, Geriatrics Branch, BRCM, entitled "Dietary energy consumption in relation to mortality." The purpose of this analysis is to investigate the relationship between dietary energy consumption and mortality for a sample of the U.S. population. Mortality rates are being analyzed in association with nutritional factors such as carbohydrate, lipid, protein, and energy intake levels.

The FRAMINGHAM DEMENTIA STUDY (Y01-AG-2-0040) entered a new phase during this year with completion of the first wave of dementia evaluations and a beginning of the second wave. During the first wave, standardized neuropsychologic and neurologic examinations were administered to: (1) all surviving participants whose performance on the battery of neuropsychological tests administered during biennial cycle 14/15 had placed them in the lowest 10 percent of the study population, (2) a comparison group of similar age, sex, and education drawn from the middle range of performance, (3) a smaller comparison group from the top quartile of performance, (4) all current participants who performed poorly (lowest 15 percent of their education strata) on the Mini-Mental State Examination (MMSE) administered during cycle 17, and (5) all institutionalized participants. Those being tested during the second wave of evaluations include all in (1), (2), and (3), anyone felt to have been demented as a result of the first wave examinations, and anyone whose MMSE score from the current examination cycle had declined by two or more points, regardless of their cycle 17 MMSE score. This will allow us to continue to follow a panel of approximately 250 persons identified as poor, middle, or high performers from cycle 14/15 (approximately 8 to 9 years ago) with in-depth examinations while also identifying current and new cases of dementia. The study offers several facets for the study of dementia and cognitive decline, some of which are being investigated by the contracting investigators at Boston University while others are under study by EDB Program staff:

> Dr. Mary Farmer has completed the first full analysis of cycle 14/15 test results and has submitted that manuscript for publication (describing the relative influence of age, education, sex, and other factors on score distributions for each of the eight tests administered).

Dr. White, Dr. Farmer, Mr. Wolz, and Dr. Kittner are currently completing a second analysis of the correlates of performance on the cycle 14/15 tests (age, education, native language, handedness, sex, and interaction terms), patterns of relationship between scores, and use of a composite, education-standardized measure of cognitive performance.

Dr. Farmer has also completed an analysis of the influence of blood pressure on cognitive test performance (examining the association with both prior and concurrent blood pressure), concluding that the influence was negligible (this manuscript is currently in clearance).

Dr. Farmer has begun work of a third analysis of the cycle 14/15 test scores, this effort focused on an effort to separate the direct effects of age on cognition from those attributable to illness. For this study, the relationships between age and test scores will be examined in persons without evidence of conditions known to adversely influence cognitive functioning (persons who survived for at least 2 years after testing, and who showed no evidence of stroke, any type of dementia, or other encephalopathic illness during the ensuing 5 years).

Mr. Wolz, in addition to assisting in a number of other efforts, has begun an analysis in collaboration with Dr. Cornoni-Huntley on relationships between performance on the cycle 14/15 neuropsychological test scores and prior history of alcohol intake.

Dr. Guralnik, Mr. Wolz, and Dr. Farmer have begun an analysis of relationships between cognitive functioning (indicated by the cycle 14/15 neuropsychological test scores), physical disability (using data from the disability instruments also administered during cycle 14/15), and subsequent survival or death.

Dr. Kittner, Dr. White, Dr. Farmer, Mr. Wolz and others authored a paper recently published in the Journal of Chronic Diseases which was based on data from the Framingham Dementia Study, and which addresses fundamental questions regarding methods for taking education into account in the interpretation of screening tests for dementia. This work is already being widely referenced and requests for reprints have been received from a large number of investigators throughout the United States and around the world.

Dr. White and Dr. Farmer continued their work on the identification by clinical record review of possible cases of dementia from among participants who have died prior to completion of the full dementia evaluation, including those who died after receiving the cycle 14/15 test battery but before any further evaluation was possible. The purposes include an effort to estimate the total burden of dementia and cognitive impairment in this cohort, and to identify a group of cases of putative dementia

to serve in preliminary investigations of possible risk factors for vascular dementia and Alzheimer disease.

Dr. White, Dr. Wolf (the principal investigator, Boston University) and others have continued to work toward the goals of identifying every case of dementia and cognitive impairment in the population; documenting the course of the clinical illnesses (through biennial reexamination as part of the routine Framingham study protocol, interim reexamination by the study neuropsychologist and neurologist supplemented with information from private physicians, family members, and institutional records); and preserving these data in documented and standardized ways for future research efforts aimed at epidemiologic investigations of pathogenesis, course, diagnostic categorization, and other issues. Planning has begun for studies focused on relationships between dementing illnesses and measures of physiologic aging (such as grip strength, vital capacity, etc.) thyroid and other endocrine functioning, vision and ophthalmological disease, hearing deficits, and certain genetic and familial conditions.

The four ESTABLISHED POPULATIONS FOR EPIDEMIOLOGIC STUDIES OF THE ELDERLY (EPESE) (AG-0-2105; AG-0-2106; AG-02107; and AG-4-2110) continued to develop and accrue vital research data. The second in-home interview was completed at the three original sites, with many participants having been interviewed by telephone once or twice during subsequent annual followup contacts. The first in-home interview is currently underway at the North Carolina site. In order to assure the coordinated and timely publication of certain essential results, committees have been formed and collaborative, prospective analyses have begun related to morbidity, mortality, hospitalization, nursing home utilization, physical functioning, cognitive impairment, and medication use. Meetings of these committees, as well as of the principal investigator committee (chaired by Dr. Cornoni-Huntley), and the documentation committee (responsible for all data quality and handling; chaired by Dr. Brock) were held at regular intervals throughout the year. Other activities and products of the EPESE during this year included:

Completion of the EPESE Resource Data Book, an exposition of key descriptive data from the three original sites organized into seven chapters with approximately 300 pages of tables and text. This book is scheduled for printing before the end of the fiscal year. The editors are Drs. Cornoni-Huntley, Brock, Wallace, Taylor, and Ostfeld.

A session at the 1985 meeting of the American Public Health Association, organized and chaired by Dr. Cornoni-Huntley, was devoted almost entirely to the EPESE.

A session at the 1986 meeting of the Society for Epidemiologic Research was devoted to the presentation of results from the EPESE, with presentations by Dr. Cornoni-Huntley (a general overview), Dr. Branch (representing the physical functioning committee),

Dr. Brock (mortality and disability), Dr. Ostfeld (nursing home admissions and discharges) and Dr. Wallace (prescription drug use).

Dr. Guralnik worked with Mr. Foley, Dr. Brock, and others on methods for imputation of missing disability data, and on patterns of change in disability scores over time in EPESE participants.

Dr. Guralnik is examining patterns of morbidity in the years prior to death. Compared with age- and sex-specific levels of disability among survivors, those EPESE participants who were destined to die in the ensuing 1 or 2 years were significantly more disabled. Excess morbidity was found to be especially high among women and in those dying at the oldest ages.

Dr. Guralnik has begun a collaborative project with Teresa Seeman of Yale University on the predictors and outcome of multiple medical conditions in the elderly.

Dr. Paul Scherr, other members of the East Boston team, and Dr. White have completed an analysis of baseline cognitive function test results for East Boston participants, and a manuscript is now ready for submission.

Ms. Moritz, Dr. Berkman, and Dr. White have completed a study of the correlates and patterns of sleep complaints among New Haven participants, and that manuscript is nearing readiness for submission.

These FY86 publications are a result of the research at the EPESE centers.

Clark, K., Sowers, M., and Wallace, R.B.: Dietary fat intake and estrone levels (In press, Preventive Medicine).

Dorfman, L. and Hill, E.A.: Rural housewives and retirement: Joint decision making matters. Family Relations, 1986.

Dorfman, L., Kohout, F. and Heckert, D.A.: Retirement satisfaction in the rural elderly. Research on Aging 7(4): 577-99, 1985.

Dorfman, L. and Moffet, M.: Retirement satisfaction in married and widowed rural women (In press, The Gerontologist).

Fethke, C., Smith, I., Johnson, N.: Risk factors affecting readmission of the elderly into the health care system. Medical Care 24(5): 429-37, May 1986.

Helling, D.K., Lemke, J.H., Semla, T.P., Wallace, R.B., Lipson, D.P., and Cornoni-Huntley, J.: Medication use in the elderly: The Iowa 65+ Rural Health Study (In press, J Am Geriatrics Society).

Hunt, R.J., Beck, J.D., Lemke, J.H., Kohout, F.J., Wallace, R.B.: Edentualism and oral health problems among elderly rural Iowans: The Iowa 65+ Rural Health Study. Am J Public Health 75(10): 1177-81, October 1985.

Johnson, N. and Fethke, C.: Post-discharge outcomes and care planning for the hospitalized elderly. Continuity of Care: Advancing the Concept of Discharge Planning. Eleanor McClelland, Kathy Kelly, and Kitty Buckwalter, eds., New York: Gruen and Stratton, Fall 1986, pp. 229-240.

Levy, S.M., Heckert, D.A., Beck, J.D., and Kohout, F.J.: Multivariate correlates of periodontally healthy teeth in an elderly population (In press, Gerodontics).

O'Hara, M., Hinrichs, J., Kohout, F., and Wallace, R.: Memory complaint and memory performance in the depressed elderly. Psychology and Aging, Vol. 3, October 1986.

O'Hara, M., Kohout, F., Wallace, R.: Depression among the rural elderly: A study of prevalence and correlates. The Journal of Nervous and Mental Disease 173(10): 582-89, 1985.

Schindler, J., Walz, T., and Craft, J.: The rural aged and their informal support network (In press, J Appl Geron.).

Sowers, M., Burns, T., and Wallace, R.B.: Familial resemblance of bone mass in adult women. Genetic Epidemiology 3: 85-94, 1986.

Sowers, M.F., Wallace, R., Hollis, B., and Lemke, J.: Parameters related to 25 Hydroxy Vitamin D levels in a population-based study of women. Am J Clin Nutr. 43: 621-28, 1986.

Sowers, M.F., Wallace, R.B., and Lemke, J.H.: Bone mass in three communities: A study of calcium and fluoride intakes (In press, Am J of Clin Nutr.).

Sowers, M.F., Wallace, R.B., and Lemke, J.H.: Correlates of forearm bone mass among women during maximal bone mineralization. Preventive Medicine 14: 585-96, 1985.

Sowers, M.F., Wallace, R.B., and Lemke, J.H.: Correlates of mid-radius bone density among postmenopausal women: A community study. Am J Clin Nutr. 41:1045, 1985.

Sowers, M.F., Wallace, R.B., and Lemke, J.H.: The association of Vitamin D and calcium intake with blood pressure among women. Am J Clin Nutr. 42: 135, 1985.

Sowers, M.F., Wallace, R.B., and Lemke, J.H.: The Influence of supplementation on nutrient intakes in women. J Am Dietetic Asso., September 1986.

Epidemiology Office staff members were involved with a variety of other activities throughout the year, including additional research efforts, support for other NIA programs and activities, activities involving other NIH and NCHS programs and developmental efforts, and activities to promote better understanding of and research on aging outside the Federal Government. Selected examples include:

Drs. Guralnik and Farmer collaborated with NCHS staff members in the development of proposals for inclusion into the third National Health and Nutrition Examination Survey (NHANES III) of components related to cognitive functioning, falls, and physical disability.

Dr. Guralnik continued his collaborative work with investigators at the Human Population Laboratory, California Department of Health Services, in research on the predictors of functional and physical status among participants in the Alameda County Study.

Dr. Guralnik worked on several other projects, including the review of a book entitled "Assessing Health and Quality of Life" (Oxford University Press), collaboration with Dr. Schneider on the preparation of two manuscripts, and a recently published review and summary of current and future demographic trends (see staff publications).

Dr. Farmer worked closely with the EPESE team at Duke University on preparation and submission of an OMB clearance package for the followup telephone interviews, budgeting issues, development of a dental substudy (funded as a grant) and detailed plans for continued surveillance of the cohort.

Dr. Miles began a collaborative project with investigators at the Fels Institute (Yellow Springs, Ohio) and the Washington Hospital Center related to the development and clinical application of anthropometric methods to the monitoring of health and nutrition in elderly persons, and on the predictive meaning of selected anthropometric indicators.

Mr. Wolz functioned as the program's principle expert on computer hardware and software. His expertise and assistance has been essential to the effective and efficient utilization of these resources throughout the program. In addition, he consulted with and assisted other NIA programs and offices with related problems, including participation with the NIA PC Club's executive committee in preparation of software, training, and demonstration sessions to facilitate exploitation of the Institute's new office technologies.

Dr. White began a study on the epidemiology of varicose veins with Ms. Yuko Palesch. This investigation, to be completed with a professional services contract, will examine the occurrence and correlates of varicose veins among NHANES I participants, and will provide the basis of future studies on varicose veins as possible risk factors for other outcomes.

Dr. White and Ms. Losonczy continued work on a study of hearing acuity and on the sensitivity and specificity of self-assessment of hearing problems. The investigation utilized data from the NHANES I, and will serve to provide the foundation for the examination of hearing problems as factors predicting future health, particularly as related to institutionalization and the possible development of dementing illnesses.

Dr. Steve Lipson, Medical Director, Hebrew Home of Greater Washington, has been spending one-half day a week with the EDB Program staff. He has conducted several informal seminars on nursing home data and "real world" experience with frail elderly. He also confers with the staff on analyses of EPESE, NHANES, and other EDB data sets providing guidance to EDB Program staff members related to epidemiologic research issues.

A commitment to training was reflected in several different activities of the Office:

- Dr. Ingrid Liu joined the program as an epidemiology trainee (USPHS Epidemiology Training Program fellow, 1986-1989). She will have one year of off-campus education at the Johns Hopkins University School of Hygiene and Public Health.

- Dr. White served as a faculty member for two advanced medical training seminars, one on osteoporosis (Honolulu, Hawaii) and the other on the clinical aspects of aging and health care for the elderly (Los Angeles, California).

- Dr. White was an invited lecturer (on the epidemiology of dementia) at a visit of the Preventive Medicine residents of Johns Hopkins University to the NIH campus.

- Dr. White served as the acting NIH coordinator and member of the steering committee for the USPHS Epidemiology Training Program, working with members of the staff of the Office of the Director, NIH, and members of the staff of the Associate Director for Planning and Evaluation, NIH, in an evaluation of the training program and the development of plans for its continuation.

Dr. White, at the request of other members of the NIH community of epidemiologists, reestablished the NIH Epidemiology Committee (organized and chaired previously by Dr. Robert Gordon) and chaired monthly meetings. These meetings have been welcomed as a needed forum to facilitate communication among epidemiology research units throughout the Federal Government. Speakers and topics have included Dr. Manning Feinleib (cooperation between the NIH and NCHS on the upcoming NHANES III), Dr. Gilbert Beebe and Mr. John Fanning (legislative initiative to increase access to IRS records for epidemiologic research), Dr. John Boice (creation of a pre-1969 national death index), and Dr. William Rhode (PHS and OMB clearance processes).

Dr. White worked with the NIH Office of Personnel and Dr. Susan Devesa, NCI epidemiologist, in an effort to create a civil service classification of "epidemiologist." At present there is no such job classification, so that epidemiologists are usually identified as statisticians or as health science administrators.

Dr. White completed two reviews of geriatric epidemiology, one a comprehensive effort including approximately 500 bibliographic items (for the Annual Review of Geriatrics and Gerontology), and the other for an "Encyclopedia of Aging." Dr. Cornoni-Huntley and Dr. White are currently preparing invited chapters for three other books in addition to texts already mentioned above.

In September, Dr. Guralnik will be an invited speaker at an NCHS sponsored conference on assessment methods for the elderly. During the same month Dr. Cornoni-Huntley and Dr. White will travel to Tokyo to participate in a Japan-US Conference on the Elderly, and will chair task forces on "Global Issues" and "Alzheimers Disease and other Dementing Illnesses of the Elderly."

Research Highlights, FY 1986

NHANES I EPIDEMIOLOGIC FOLLOWUP STUDY:

- The NHANES I Epidemiologic Followup Study provides a unique resource for assessing the effects of baseline sociodemographic, health, and nutritional factors on future mortality in a large heterogeneous nationally representative population. Cause of death distributions and mortality patterns by age, race, and sex were quite similar to what was expected based on U.S. vital statistics (Y01-AG-9-0018).

- Tracing, interviewing, physical measurements and death certificate acquisition were quite successful in the NHANES I Epidemiologic Followup Study. Ninety-three percent of the study population was located and interviews with participants or proxy were completed for 85 percent of the original cohort or 91 percent (12,222 persons) of those successfully traced (Y01-AG-9-0018).

-FRAMINGHAM DEMENTIA STUDY: First wave of followup evaluations completed, first group of clinically defined dementia cases identified and categorized; two papers delivered at scientific meetings; one paper published, another submitted for publication, a third in final phases of pre-publication clearance, and several other analyses underway (Y02-AG-2-0040).

ESTABLISHED POPULATIONS FOR EPIDEMIOLOGIC STUDIES OF THE ELDERLY:

- A study of a retired rural population (Iowa) found that health, financial status, and aspects of social integration were major contributors to satisfaction during retirement, as measured by the Retirement Descriptive Index and the Life Satisfaction Index-Z. Most important factors in retirement satisfaction among rural retirees were quality of relationship, frequency of aid from confidants and relatives, and involvement in organizations, along with good health and adequate financial status. Activity can be seen as only a partial explanation for retirement satisfaction. Qualitative aspects of personal relationships were more consistent predictors both of overall retirement satisfaction and of specific dimensions of retirement satisfaction (AG-0-2106).

- It was found in the Iowa population that both men and women with previous farm exposure currently experience a greater prevalence of all nine respiratory symptoms employed in the study relative to non-farmers. Farm men report a lower prevalence of Parkinson's disease and prostate conditions, but report a greater prevalence of stroke and a lower level of self-perceived health status. Women with a farm work history experience a greater level of physical function and fewer symptoms associated with mental illness. Overall significant benefits as well as risks associated with a history of farm work were identified. However, of those who survived to age 65, extended exposure to farm work did not have a major impact on the overall current health status of men and women (AG-0-2106).

- The prevalence of depression among rural elderly living in Iowa appears to be low based on the Center for Epidemiological Studies Depression Scale (CES-D) and the Research Diagnostic Criteria (RDC) for depression. Social support is highly available in the communities where the study was carried out, and this fact may account in part for the low prevalence of depression. Women evidenced more depression symptoms than men, but women and men did not differ in the prevalence of RDC-defined depression. Subjects who lived alone or who had lower incomes were particularly at risk for depression (AG-0-2106).

- A Iowa EPESE included questions about loss of teeth, use of dentures, and presence of oral health problems. Edentulism rates were 10 to 15 percent lower than those found a decade earlier in national health surveys. A log-linear analysis found that the best demographic predictors of edentulism were education, age, and marital status. Spouses tended to be of similar dentition status, i.e., both edentulous or both dentate. No association was found between the loss of teeth and prevalence of digestive problems. Only 7 percent of the edentulous people felt they needed to visit a dentist, even though 70 percent had not seen one for over 5 years. About 40 percent had dentures that were over 20 years old, with half of these being over 30 years old. Many dentures were loose and causing soreness in the mouth or difficulty in eating. These elderly people appeared to expect some problems with dentures and oral pain and accepted them without feeling a need to seek treatment (AG-0-2106).

- The associations between depressive symptoms and functional disability and chronic conditions examined in the Yale EPESE participants showed mean CES-D scores are 4.86 for those without any disabilities and range to 13.51 for those with major functional disabilities. However, physical disability is significantly associated with virtually every item on the CES-D scale not just those somatically-oriented items. The addition of functional disability to a multivariate model including age substantially weakens the associations between age and depressive symptoms (AG-0-2105).

NATURAL HISTORY OF SENILE DEMENTIA:

-First two waves of clinical evaluations completed, third wave begins; initial analyses from the baseline evaluation complete, data presented at meetings and in papers submitted and in preparation; results indicate an age-specific prevalence among East Boston elderly more than double usual community estimates, with a substantially higher proportion attributed to Alzheimer disease than usually expected, very few cases of dementia attributable to "reversible" causes, very few cases previously recognized as suffering from dementia, and with an unexpectedly strong relationship between selected motor signs and cognitive impairment (AG-1-2106).

CONTRACT

Name and Number: YALE UNIVERSITY (N01-AG-0-2105)

Title: Established Populations for Epidemiologic Studies of the Elderly (EPESE)

Date Contract Initiated: June 30, 1980

Current Annual Level: $356,681

Objectives: The purpose of this project is to conduct epidemiologic investigations in a community to develop new knowledge concerning the medical and social factors in health and diseases of the aged. Within the major prospective study are substudies on problems of pain, vision, hearing, sleep, drug use, constipation, social support and other pertinent areas.

Methods Employed: The project shall include cross-sectional and prospective studies in a carefully defined and accessible population using standard field and analytical techniques. Yearly surveillance of the population will be included.

Major Findings: The associations between depressive symptoms and functional disability and chronic conditions examined in participants showed mean CES-D scores are 4.86 for those without any disabilities and range to 13.51 for those with major functional disabilities. However, physical disability is significantly associated with virtually every item on the CES-D scale not just those somatically-oriented items.

Significance to Biomedical Research: The population over age 65 has been steadily increasing both in relative and absolute numbers. With this increase has come an awareness of a variety of health and social problems which are creating problems for our social and physical environment. To provide new knowledge it is important to have studies representing existing conditions in a community population. Within obvious logistical constraints populations will be available to the NIA scientific community for specific studies.

Proposed Course: The established methods of surveillance (annual telephone contacts, monitoring of deaths, hospitalizations, and institutionalization) will continue. Efforts to assure the prompt, cooperative publication of certain key results have already begun. We expect all of these basic analyses for the first 2 to 3 years of the study to be completed in the upcoming year. They include analyses of morbidity, mortality (frequency, causes, correlates and predictors), nursing home admission (frequency and "traffic patterns," predictors and correlates), hospitalization (frequency, diagnoses, proceedures, length of stay, disposition), physical functioning (associated conditions, patterns of change, frequency), and cognitive impairment (frequency, patterns of change, associated conditions).

Publication: Berkman, L.F., Berkman, C.S., Kasl, S., Freeman, D.H., Leo, L., Ostfeld, A.M., Cornoni-Huntley, J., and Brody, J.A.: Depressive symptoms in relation to physical health and functioning in the elderly. Am J of Epid. 124(3): 372-88, September 1986.

CONTRACT

Name and Number: UNIVERSITY OF IOWA (N01-AG-0-2106)

Title: Established Populations for Epidemiologic Studies of the Elderly (EPESE)

Date Contract Initiated: June 30, 1980

Current Annual Level: $525,451

Objectives: The purpose of this project is to conduct epidemiologic investigations in a community to develop new knowledge concerning the medical and social factors in health and diseases of the aged. Within the major prospective study are substudies on problems of pain, vision, hearing, sleep, drug use, constipation, social support and other pertinent areas.

Methods Employed: The project shall include cross-sectional and prospective studies in a carefully defined and accessible population using standard field and analytical techniques. Yearly surveillance of the population will be included.

Major Findings: Health, financial status, and aspects of social integration were major contributors to satisfaction during retirement; both men and women with previous farm exposure currently experience a greater prevalence of all nine respiratory symptoms employed in the study relative to non-farmers; prevalence of depression among rural elderly living in Iowa appears to be low; endentulism rates were 10 to 15 percent lower than those found a decade earlier in national health surveys.

Significance to Biomedical Research: The population over age 65 has been steadily increasing both in relative and absolute numbers. With this increase has come an awareness of a variety of health and social problems which are creating problems for our social and physical environment. To provide new knowledge, it is important to have studies representing existing conditions in a community population. Within obvious logistical constraints populations will be available to the NIA scientific community for specific studies.

Proposed Course: The established methods of surveillance (annual telephone contacts, monitoring of deaths, hospitalizations, and institutionalization) will continue. Efforts to assure the prompt, cooperative publication of certain key results have already begun. We expect all of these basic analyses for the first 2 to 3 years of the study to be completed in the upcoming year. They include analyses of morbidity, mortality (frequency, causes, correlates and predictors), nursing home admission (frequency and "traffic patterns," predictors and correlates), hospitalization (frequency, diagnoses, proceedures, length of stay, disposition), physical functioning (associated conditions, patterns of change, frequency), and cognitive impairment (frequency, patterns of change, associated conditions).

Publications: Cornoni-Huntley J., Brock, D.B., Ostfeld, A.M., Taylor, J.O. and Wallace, R.B., (Eds.): Established Populations for Epidemiologic Studies of the Elderly, Resource Data Book, National Institute on Aging. NIH Publ. No. 86-2443. U.S. Government Printing Office, Washington, D.C., 1986.

CONTRACT

Name and Number: PETER BENT BRIGHAM HOSPITAL (N01-AG-0-2107)

Title: Established Populations for Epidemiologic Studies of the Elderly (EPESE)

Date Contract Initiated: June 30, 1980

Current Annual Level: $405,848

Objectives: The purpose of this project is to conduct epidemiologic investigations in a community to develop new knowledge concerning the medical and social factors in health and diseases of the aged. Within the major prospective study are substudies on problems of pain, vision, hearing, sleep, drug use, constipation, social support and other pertinent areas.

Methods Employed: The project shall include cross-sectional and prospective studies in a carefully defined and accessible population using standard field and analytical techniques. Yearly surveillance of the population will be included.

Major Findings: Three substudies on the topics of urinary incontinence, characteristics of persons who refuse to participate in the study, and predictors of need for home care were prepared. Work has been in progress to develop manuscripts for publication of these three studies as well as several others that have emanated from the project. Much team effort is being devoted to analyses of data and writing of manuscripts.

Significance to Biomedical Research: The population over age 65 has been steadily increasing both in relative and absolute numbers. With this increase has come an awareness of a variety of health and social problems which are creating problems for our social and physical environment. To provide new knowledge it is important to have studies representing existing conditions in a community population. Within obvious logistical constraints populations will be available to the NIA scientific community for specific studies. High priority short term studies will be encouraged.

Proposed Course: The established methods of surveillance (annual telephone contacts, monitoring of deaths, hospitalizations, and institutionalization) will continue. Efforts to assure the prompt, cooperative publication of certain key results have already begun. We expect all of these basic analyses for the first 2 to 3 years of the study to be completed in the upcoming year. They include analyses of morbidity, mortality (frequency, causes, correlates and predictors), nursing home admission (frequency and "traffic patterns," predictors and correlates), hospitalization (frequency, diagnoses, proceedures, length of stay, disposition), physical functioning (associated conditions, patterns of change, frequency), and cognitive impairment (frequency, patterns of change, associated conditions).

Publications: Cornoni-Huntley J., Brock, D.B., Ostfeld, A.M., Taylor, J.O. and Wallace, R.B., (Eds.): Established Populations for Epidemiologic Studies of the Elderly, Resource Data Book, National Institute on Aging. NIH Publ. No. 86-2443. U.S. Government Printing Office, Washington, D.C., 1986.

CONTRACT

Name and Number: DUKE UNIVERSITY MEDICAL CENTER (N01-AG-4-2110)

Title: Established Populations for Epidemiologic Studies of the Elderly (EPESE)

Date Contract Initiated: September 30, 1984

Current Annual Level: $842,991

Objectives: Duke University Medical Center is studying an elderly population of at least 4500 noninstitutionalized persons, 65 years of age or older, and of which at least 50 percent is black and approximately 30 percent to 40 percent is white. The population is stable with a wide range of socioeconomic status in both black and white groups. The influence of social, environmental, behavioral, and economic forces on the mortality, morbidity, and utilization of health services in the study population will be investigated.

Methods Employed: Descriptive and analytical epidemiologic studies of existing problems and surveillance of newly developing problems all with an emphasis upon future intervention and prevention will be conducted. Investigators will conduct cross-sectional and prospective studies as well as more detailed problem-related studies in a carefully defined and accessible population using standard field and analytical techniques. During the first year the population was defined ecologically in terms of social, political, and demographic characteristics; and working relationships were established with the public and professional groups within this population. During the second year now in progress, the population is being interviewed using the survey research questionnaire.

Major Findings: Instruments were developed and pretested, specific research goals were defined, and coordination with the three existing population studies developed.

Significance to Biomedical Research: The NIA is at present funding three population studies of the elderly to determine the influences of social, environmental, behavioral, and economic forces on the mortality, morbidity, and utilization of health services in the elderly. These studies, however, are not fully representative of the U.S. elderly, specifically, they do not include a significant proportion of blacks. It is well known that distributions of certain risk factors and diseases differ between U.S. blacks and other racial groups. Therefore, the purpose of this contract is to conduct epidemiologic investigations in an elderly population of which at least 50 percent is black in order to develop new knowledge concerning the medical and social factors in health and diseases of the aging black population.

Proposed Course: A baseline survey of the population is being conducted at present to obtain baseline data and an estimate of the participation rate for the specific problem-related studies. The 2nd through the 6th years shall be devoted to continual surveillance of the population, analysis of data, and development and completion of problem-related studies. A final household interview shall be conducted in the 5th year.

DEPARTMENT OF HEALTH AND HUMAN SERVICES - PUBLIC HEALTH SERVICE

NOTICE OF INTRAMURAL RESEARCH PROJECT

PROJECT NUMBER
Z01 AG 02010 08 EDBP

PERIOD COVERED
October 1, 1985 to September 30, 1986

TITLE OF PROJECT *(80 characters or less. Title must fit on one line between the borders.)*
Followup of National Health and Nutrition Examination Survey I (NHANES I)

PRINCIPAL INVESTIGATOR *(List other professional personnel below the Principal Investigator) (Name, title, laboratory, and institute affiliation)*
PI: Joan Cornoni-Huntley, Ph.D., M.P.H.
Acting Deputy Associate Director, EDBP, NIA

COOPERATING UNITS *(if any)*
National Center for Health Statistics, Division of Analysis; NCI; NHLBI; NIADDK, NIMH; NIAAA; NIAID; and NINCDS.

LAB/BRANCH
Epidemiology Office

SECTION
Epidemiology, Demography, and Biometry Program

INSTITUTE AND LOCATION
NIA, NIH, Bethesda, MD 20892

TOTAL MAN-YEARS: .40
PROFESSIONAL: .20
OTHER: .20

CHECK APPROPRIATE BOX(ES)
☑ (a) Human subjects ☐ (b) Human tissues ☐ (c) Neither
☐ (a1) Minors
☑ (a2) Interviews

SUMMARY OF WORK *(Use standard unreduced type. Do not exceed the space provided.)*

The purpose of this project is to design and complete a followup of persons examined in the NHANES I to study how factors previously measured relate to the health conditions that have developed since the survey. The three major areas for prediction of outcome are 1) risk factors for chronic disease 2) nutrition and 3) health care utilization. The survey will have a household interview including self-reporting of health conditions, dietary history and behavioral and social status plus some physical measurements as blood pressure, height, and weight. Death certificates and hospitalization records will be acquired for all reported events.

A third phase of the data gathering, annual (for older subjects) or biennial telephone contacts to ascertain interim events and changes, has begun. Continued ascertainment of health events by interview is being supplemented with information from hospital, nursing home, and death records.

Publications: Maddans, J.H., Cox, C.S., Kleinman, J.C., Makuc, D., Feldman, J.J., and Cornoni-Huntley, J.C. The mortality experience of the NHANES I Epidemiologic Followup Study Cohort--Initial Followup 1982-84. Public Health Rep. 101(5): 474-81, 1986.

Maddans, J.H., Kleinman, J.C., Cox, C.X., Barbano, H.E., Feldman, J.J., Cohen, B., Finucane, F.F., and Cornoni-Huntley, J.C. NHANES I Epidemiologic Followup Study--Report on the Initial Followup 1982-84, Public Health Rep. 101(5): 465-73, 1986.

CONTRACT

Name and Number: PETER BENT BRIGHAM HOSPITAL/
EAST BOSTON NEIGHBORHOOD HEALTH CENTER (N01-AG-1-2106)

Title: Senile Dementia: Natural History in a Noninstitutionalized Population

Date Contract Initiated: June 16, 1981

Current Annual Level: - 0 -

Objectives: The objective of this study is to describe the course of general health and cognitive decline in a group of SDAT victims and controls.

Methods Employed: Persons suspected of being demented because of performance on a screening examination will receive a neurological and neuropsychological evaluation. SDAT cases and a number of matched controls will then be reexamined at yearly intervals over a period of approximately 3 years; thereafter the cases and controls will be followed as defined by their participation in another EDBP study (EPESE)--for death, hospitalization, and institutionalization end points.

Major Findings: First two waves of clinical evaluations completed, third wave begins; initial analyses from the baseline evaluation complete, data presented at meetings and in papers submitted and in preparation; results indicate an age-specific prevalence among East Boston elderly more than double usual community estimates, with a substantially higher proportion attributed to Alzheimer disease than usually expected, very few cases of dementia attributable to "reversible" causes, very few cases previously recognized as suffering from dementia, and with an unexpectedly strong relationship between selected motor signs and cognitive impairment.

Significance to Biomedical Research/Justification: This study will provide a better understanding of the prognosis and clinical course of SDAT.

Proposed Course: Although the original contract ended in June 1986, the contractor has completed only about one-half of the work scope, and an extension has been implemented. Because of the extension, interim data tapes including all of the research information gathered during the baseline and first annual clinical examinations have been requested, and are expected during the early part of the upcoming fiscal year. We hope to begin limited, collaborative analyses on these data during the year, focusing especially on aspects which shed light on methodologic issues.

DEPARTMENT OF HEALTH AND HUMAN SERVICES - PUBLIC HEALTH SERVICE

NOTICE OF INTRAMURAL RESEARCH PROJECT

PROJECT NUMBER

Z01 AG 04003 05 EDBP

PERIOD COVERED
October 1, 1985 to September 30, 1986

TITLE OF PROJECT *(80 characters or less. Title must fit on one line between the borders.)*
Dementing Illnesses in the Framingham Heart Study

PRINCIPAL INVESTIGATOR *(List other professional personnel below the Principal Investigator.) (Name, title, laboratory, and institute affiliation)*
Lon R. White, M.D., M.P.H.
Chief, Epidemiology Office, EDBP, NIA
Mary E. Farmer, M.D., M.P.H.
Senior Staff Fellow, Epidemiology Office, EDBP, NIA

COOPERATING UNITS *(if any)*

NHLBI

LAB/BRANCH
Epidemiology Office

SECTION
Epidemiology, Demography, and Biometry Program

INSTITUTE AND LOCATION
NIA, NIH, Bethesda, MD 20892

TOTAL MAN-YEARS 0.5	PROFESSIONAL 0.5	OTHER.

CHECK APPROPRIATE BOX(ES)
☑ (a) Human subjects ☐ (b) Human tissues ☐ (c) Neither
☐ (a1) Minors
☑ (a2) Interviews

SUMMARY OF WORK *(Use standard unreduced type. Do not exceed the space provided.)*

Demented subjects are identified by a two-phase evaluation: administration of the screening test as part of the regular biennial examination, coupled with neurological and neuropsychological evaluations of participants who fail the screening test. A second group of dementia cases will be identified from among recently deceased study participants based on: (a) poor perfromance on neuropsychological tests administered approximately 5 years ago, (b) review of medical records, and (c) telephone interviews with a surviving family member. The study entered a new phase during this year with completion of the first wave of dementia evaluations and a beginning of the second wave. Those tested during the second wave of evaluations included all in the first wave, anyone felt to have been demented as a result of the first wave examinations, and anyone whose Mini-Mental State Examination (MMSE) score from the current examination cycle had declined by two or more points, regardless of their cycle 17 MMSE score. This will allow us to continue to follow a panel of approximately 250 persons identified as poor, middle, or high performers from cycle 14/15 with in-depth examinations while also identifying current and new cases of dementia.

Publication: Kittner, S.J., White, L.R., Farmer, M.E., Wolz, M., Kaplan, E., Moes, E., Brody, J.A., and Feinleib, M.: Methodological issues in screening for dementia: The problem of education adjustment. J Chron Dis. 39(3): 163-70, 1986.

DEMOGRAPHY AND ECONOMICS OFFICE

A particularly important achievement of the Demography and Economics Office has been the publication of an article in The Gerontologist entitled "Evaluation of the Cost of Caring for the Senile Demented Elderly: A Pilot Study." This was part of the "Evaluation Study of Senile Dementia Costs" that was funded by the Department of Health and Human Services. Last year we reported on the national cost estimate of dementia which utilized some of the information from this publication. This pilot study is based on case studies of 44 elderly persons recruited from nursing homes and private residences. This method was chosen because of the necessity to verify the dementia status of the case. The cases were verified to include those suffering from Alzheimer's type, multi-infarct dementia, and mixed other cases. Data was collected through a physical and medical assessment instrument from the 1977 National Nursing Home Survey, the Mini-Mental State Examination, Activities of Daily Living, the OARS Multidimensional Functional Assessment Questionnaire, and diaries of the time spent caring for the demented subjects by nurses or family members.

The data measurements derived some interesting results. None of the at home patients were reported to exhibit abusive, aggressive, or disruptive behaviors. A higher proportion of patients "wander" in the nursing home setting than at home. The demented elderly in the nursing home tend to be more dependent in terms of daily living activities. Daily time records indicated that the nursing home staff spent an average of 2.71 hours per day caring for the demented patient which is 36 percent more time than an average patient. At home, it requires about 6.28 hours per day to care for the demented patient with a wide variation from 24 hours per day to 72 minutes per day. The amount of time spent caring depends greatly on the living arrangement, the physical and mental status of the patient, and the attitude and perception of the care-giver.

The Demography and Economics Office has emphasized work in population aging with the continual development of the Macroeconomic-Demographic Model (MDM). This model focuses on the current and future trends of population whose mean age is rising or whose population is made up of an increasing proportion of older individuals. This research is closely associated with the concept of demographic transition to a stable and older population structure. We have also begun to focus on the aged population per se through our wealth studies, NHANES studies, and a new project on the microeconomics of aging that examines the health expenditures and health status of the elderly.

A major enhancement to the MDM continues under a contract to ICF, Incorporated (AG-2-2138) for "Health Expenditures and the Aging Population." This project shall examine the interrelationships by age among total health expenditures and other consumption components that make up the consumers market basket of goods and services. Secondly, the health expenditures model shall examine the interrelationships among the various health categories--hospital care, physicians' services, dentists' services, other professional services, drugs and medical sundries, eyeglasses, and appliances. Important determining factors are prices, income, age of head

of household, family size, region, race, urban-rural residence, and sex. This effort involved briefings and coordination with such agencies as the Health Care Financing Administration, Social Security Administration, DHHS Assistant Secretary for Planning and Evaluation, National Center for Health Statistics, and the National Center for Health Services Research in order to avoid duplication and waste. Analysis of these data has been started with the generation of numerous age-sex-expenditure breakdowns for type of health expenditures and source of funding and is being published by International Health Economics and Management Association. The contract was extended a year to allow revisions to the Model's data base. The National Health Accounts were recently revised, thus making the Model's data obsolete. The model was unsuccessfully estimated and a report on the results was transmitted March 11, 1986. A new report was transmitted August 1, 1986, entitled, "A Macroeconomic-Demographic Model of Health Care and Consumer Expenditures." This reports on the successful estimation of the consumer and health expenditure model.

The contract "Aging, Health and Consumer Expenditures" (AG-3-2117) is coordinated with the health expenditures modeling contract. The purpose of this research is to disaggregate consumption by age in the (MDM) so that the effects of the aging population may be examined with particular attention to the aggregate share going to health care services. We shall examine the effects of public policy on the welfare of the elderly, using the latest cost-benefit techniques. In particular, the impact of rising health costs from 1970 to 1980 will be examined and the effects of population change on health expenditures. This contract is also being supported under an interagency agreement with the Assistant Secretary of Planning and Evaluation, DHHS. The Health Expenditures Model has been estimated simultaneously with the Consumer Expenditures Model to provide one consistent demand system.

A contract entitled "Update and Revision of the Macroeconomic-Demographic Model" (AG-4-2107) was awarded in September 1984. Because of delays in the consumer and health expenditure modeling, the updating and revision work has been postponed to permit incorporation of the new models. The new completion date is June 1, 1987. The original NIA/MDM was completed in 1981 and is obsolete because of new data and changes in social security and private pension legislation. This proposed contract has been coordinated with the Office of the Assistant Secretary for Planning and Evaluation, DHHS, who is particularly interested in the analysis of social security. A previously planned publication on the future of the retirement income system will be updated and revised. This will be of interest to a wide audience in the aging community with its examination of alternative future courses of social security and the private pension system. An in-depth analysis of the 1983 social security analysis shall be performed, and this analysis shall be coordinated with the Office of the Assistant Secretary for Planning and Evaluation, DHHS. We have received a draft report on the revisions to the NIA population model.

A new contract (AG-5-2106) entitled, "Household Formation, Housing and the Aging Population," was awarded June 30, 1985. This research shall develop a household formation model, a housing model, integrate the models with the

NIA MDM, and analyze alternative scenarios of demographic and economic changes. The housing model shall determine the total expenditures on housing as well as the housing stock size, starts, and mobile home shipments. The effect of fertility, mortality, and family stability on housing consumption shall be examined. The household model shall determine family formation using child parity distributions for each cohort based on fertility experience, trajectories of marital status distributions for each cohort, children ever born by marital status, and children ever born who are present in the household. The rate of household formation and dissolution by the elderly shall be examined. Because of problems in estimating the health expenditures model, work on this contract will not be completed by August 31, 1986. An extension to December 1987 is now under consideration.

With the award and extension of a contract (AG-5-2107) entitled "Microeconomics of Aging Health Status and Conditions, and Health Expenditures," our research initiative into the special problem of the elderly continues. This study also follows from the concern to focus studies more specifically on the older age cohort. The Microeconomics of Aging shall address questions related to the demand for health services and the effects of Federal and private health insurance. This work shall exploit newly available data bases for analysis directly related to the coming financial Medical care crisis, but which emphasizes the scientific base, rather than the typical programmatic emphasis on Federal budgetary implication. Our concern will be on the effect of health status on insurance choice as well as the price effect of insurance coverage. A simulation model of the insurance decision in the expected utility framework will be developed after the estimation of a number of health expenditure gamma distributions for persons of different health status and demographic characteristics. Under study is a six-equation model of equilibrium for the insurance market that allows for medicare supplemental insurance, persons of different health status (same characteristics unobservable to the insurers) and different attitudes towards risk bearing (unobservable to the insurer).

Research Highlights, FY 1986

- In a pilot study of 44 demented elderly, 2 hours and 43 minutes per day were spent caring for the patient by the nursing home staff.

- In 1983, the extrapolated per day cost of nursing home care per demented elderly was $22,458 after adjusting upward for the increased labor cost of additional staff time.

- Using a market value approach to estimate the alternative cost for family members of caring for a demented elderly patient at home, the daily cost of care at home is $29.15 in 1983. This was determined in a case study where it was estimated that 6.28 hours of care was required which could be valued at $4.64 per hour.

- In a pilot study of 44 demented elderly, none of the at home patients were reported to exhibit abusive, aggressive, or disruptive behavior.

- In a pilot study of 44 demented elderly, the annual average costs of caring for a demented patient at home was $11,735. For those with severe cognitive impairment, costs of caring is twice as high as the mildly or moderately cognitively impaired patient. (Contract No. AG-3-2123)

- Based on an analysis of the National Medicare Care Utilization and Expenditure Survey, the noninstitutionalized population cost $28 billion in custodial costs, $8.2 billion in Medical Costs, and $36.2 billion in total direct costs in 1980. In an analysis of the National Medical Care Utilization and Expenditure Survey the following distribution of total health care expenditures of the noninstitutionalized population has been prepared:

	Age 65-74	75+
Hospital	$12,653 (15%)	12,955 (15%)
Physician	5,036 (14%)	3,347 (10%)
Dental	914 (05%)	333 (02%)
Other Professional	345 (08%)	429 (09%)
Prescription Drugs	1,389 (17%)	902 (11%)
Appliances	397 (13%)	255 (08%)
Other Health	504 (19%)	151 (06%)
All Services	21,239 (14%)	18,373 (12%)

- In an analysis of the National Medicare Care Utilization and Expenditure Survey the following average annual health care expenditure per noninstitutionalized population has been prepared:

	Age 65-74	75+
All Hospital Services	$ 834	$1,560
Emergency Room	20	27
Outpatient	55	43
Inpatient	760	1,490
Physician Visits	332	403
Dental	60	40
Other Professional	23	52
Prescription Drugs	92	109
Appliances	26	31
Other Health	33	18
All Services	1,401	2,212

- In an analysis of the National Medical Care Utilization and Expenditure Survey, the source of nursing home payment is distributed as:

Household out-of-pocket	43.6%
Private Insurance	.9
Other private	.6
Medicare	.9
Medicaid	48.0
Other Public Assistance	3.2
Veterans	1.8
	100%

- In the health expenditures model the pattern of total expenditure varies according to age. The following table is for a family of four, male head of household, living in Northeast, white, urban area.

		Age of Head of Household						
		16-24	25-34	35-44	45-54	55-64	65-74	75+
Health	Hospital	.1093	.1063	.0816	.0725	.1003	.1288	.1408
Expenditure	Physician	.4366	.4460	.3650	.3696	.3913	.3740	.3868
Shares	Dental	.1557	.1636	.2376	.1973	.1394	.1108	.0416
	Professional	.0707	.0560	.0768	.0775	.0681	.0625	.0598
	Drugs	.1246	.1274	.1339	.1421	.1744	.2134	.2667
	Appliances	.1030	.1007	.1051	.1410	.1265	.1105	.1042

- A consumer expenditure model projects the total health expenditure shares in 1973 for households of different age of head. For example, we see a rising proportion going to health as age increases, with a peak of 10.64 percent for those 75 years of age or older. The results are:

	Age of Head of Household						
	16-24	25-34	35-44	45-54	55-64	65-74	75+
Health Expenditures	.0636	.0644	.0684	.0720	.0767	.0906	.1064

(Contract No. AG-2-2138)

- A consumer expenditure model projects the following price elasticities across households of different age heads (in household of size four, male head, northeast region, white, urban, total expenditure of $9,000). Economists use this as a measure of the sensitivity or responsiveness of the quantity demanded to changes in prices. The price elasticity is defined as the percentage change in quantity resulting from a one-percent change in price. The demand for health care is elastic since the price elasticity exceeds one. The price elasticity declines monotonically with age and indicates slightly less substitution possibilities.

	Age of Head of Household						
Health	16-24	25-34	35-44	45-54	55-64	65-74	75+
Expenditure elasticity	-1.50	-1.50	-1.46	-1.44	-1.41	-1.34	-1.30

(Contract No. AG-3-2117)

CONTRACT

Name and Number: Applied Systems Inst., Inc. (N01-AG-5-2107)

Title: Microeconomics of Aging, Health Status and Conditions, and Health Expenditures

Date Contract Initiated: September 23, 1985

Current Annual Level: $122,488

Objectives: The specific objective of this contract is to focus on the microeconomic analysis of aging and health, i.e., the health status and condition of the elderly and their health care demand. This work will involve reviewing the relevant literature on aging and health economics, estimating the effect of health status and health conditions, as well as other independent variables on health utilization, and analyzing the results with regard to the elderly population and their health needs.

Methods Employed: The work performed under this contract is of a scientific and technical nature and directed to understanding health expenditures in the elderly population. An important aspect of health expenditures is understanding the role of health status and health conditions in the demand for health care by the elderly. Therefore, a careful development of the joint demand for insurance and health care must be done along with consideration of such aspects as Medicare, Medicaid, and Private Supplemental Insurance. The simulation model will be developed to explore the various aspects of health expenditures with respect to prices, income, private insurance programs, Medicaid, and demographic groups. Such notions as risk spreading and resource allocation are particularly important as well as the implications of elderly welfare and the role of private and governmental insurance markets. In addition, an empirical model of elderly health expenditures will be developed and estimated with data available from cross sectional surveys such as the National Medical Care Expenditure Survey, National Medical Care Utilization and Expenditure Survey, and the National Health Interview Survey. Thus, analysis will be done on publicly available data resources and no primary collection of household survey data will be made. The results of the simulation modeling and econometric modeling shall be presented in final reports.

Significance to Biomedical Research: The NIA/EDB Program is already supporting the development of a health expenditures model for the NIA Macroeconomic-Demographic Model of the U.S. economy. This work emphasizes a population aging focus within a macroeconomic framework. The current work requested focuses on microeconomic considerations in the health market for the elderly.

Proposed Course: Our concern will be on the effect of health status on insurance choice as well as the price effect of insurance coverage. A simulation model of the insurance decision in the expected utility framework will be developed after the estimation of a number of health expenditure gamma distributions for persons of different health status and demographic characteristics. Under study is a six-equation model of equilibrium for the insurance market that allows for medicare supplemental insurance, persons of different health status (same characteristics unobservable to the insurers) and different attitudes towards risk bearing (unobservable to the insurer).

BIOMETRY OFFICE

The Biometry Office activities and achievements for FY 1986 have continued from those activities ongoing in FY 1985, with an increased level of analytical activity by the staff as additional data have accumulated from the various ongoing studies of the EDB Program. Likewise, we have experienced stepped-up methodological consultation and statistical support for the other components of EDB as their analytical activity has also been on the rise. Our statistical liaison and collaboration with other agencies--most notably the National Center for Health Statistics and other NIH Institutes--has continued to provide stimulation to our staff, and we have begun collaborative activities with other NIA components, particularly in the analysis of the NHANES I and its Epidemiologic Followup Survey. One new project was initiated, by means of an interagency agreement with NICHD, to develop and refine methods for multiple linear regression analysis of data from a complex sample survey, principally the NHANES I and its followup.

The analysis of data from the EPESE, both baseline and now followup and surveillance data, occupies a great deal of Biometry Office staff time. First, the baseline survey Resource Data Book is complete, with all text, tables, graphics, and appendices having been reviewed and approved by the editors. We expect an early printing and publication date, before the end of FY 1986. In other analysis of baseline data, Mr. Foley presented cross-sectional data on the measures of physical functioning and the prevalence rates of disability at the American Public Health Association meeting in November 1985. Dr. Brock presented a paper on the effects of missing data on the Iowa cognitive recall test at the American Statistical Association meeting in Chicago in August 1986. Dr. Brock also participated with investigators in East Boston who compared ready respondents with reluctant respondents and refusers in the East Boston baseline survey. These results were also presented at the APHA meeting.

With the arrival of followup and surveillance data from EPESE, analysis has begun in those areas. As mentioned in last year's report, several core analysis committees have been organized for endpoint data from EPESE. Dr. Brock has been appointed chairman of the mortality endpoint committee which has been assigned expanded responsibility for stimulating, encouraging, and reviewing all collaborative endpoint analysis related to mortality as well as participating in some of the analyses. As the first effort in this area, Dr. Brock presented a paper on 2-year mortality and functional capacity at the meeting of the Society for Epidemiologic Research in June 1986, in Pittsburgh. Additional analyses are either planned or underway in relating baseline blood pressure levels to mortality and in smoking and mortality. As more years' mortality data accumulate, analyses will be begun in cause-specific mortality. Causes of death are being coded regularly for the three original EPESE locations by a single nosologist in Iowa under a professional services contract provided by the Biometry Office. In other endpoint areas, Mr. Foley is a member of the nursing home endpoint committee as well as that for physical functioning as an endpoint. Both of these groups prepared papers for the SER meeting with considerable input by Mr. Foley in organizing the data to be presented.

The nursing home group presented 2-year admission rates for the EPESE cohorts. The physical functioning group described the rates of change in functioning over a 2-year period. As with mortality, these groups have many future analyses planned.

EPESE activities in other areas occupy additional Biometry Office staff time. Dr. Brock continues as chairman of the Documentation Committee which has met three times this year, with another meeting planned for September in Boston. In addition to standardizing the documentation of all the data files being produced, with specifications developed by Ms. Lafferty, this group has agreed on the production of a followup status file to assist investigators in identifying eligible subpopulations for analysis of followup and surveillance data. The Documentation Committee has also been involved in assisting the hospitalization core analysis committee in defining meaningful endpoints for analysis. Finally, the group will meet with the newly-formed medications committee to help standardize the drug coding among the centers. In other areas, Ms. Cruz continues her activities as staff liaison to the Publications Committee, Mr. Foley serves as a member of the Questionnaire Committee and as advisor on the OMB clearance process, and Dr. Brock and Ms. Lafferty have provided consultation to the fourth center at Duke University on sampling and data management issues. We are hopeful that as the Duke team completes its baseline survey that the data set will be fully compatible with those of the other three centers with respect to coding, formatting, and other data processing matters.

Analytic activities involving the NHANES I Followup data have increased almost to the level of those for the EPESE project. Several staff members are involved in the preparation of individual chapters for the data book being written for this important investigation. Mr. Everett has worked with a nutritionist from the University of California on the development of comparable food groupings for the baseline and followup surveys. This group is now writing the nutrition chapter for the data book. Ms. Losonczy has been conducting the statistical analysis and is participating in the writing of the stroke chapter for the book. Mr. Foley is developing analytical models and coordinating the writing of the chapter on physical functioning for this publication. In addition to the book chapters, a number of papers based on the NHANES are in various stages of preparation. Ms. Losonczy has completed a paper (joint with a nutritionist formerly at the University of Iowa and now at Cornell) on the relationship of bone density and hearing loss. She is also working on a paper examining the relationship of various anthropometric measures to outcomes measured in the followup. Mr. Everett has been working with staff from the Arthritis Institute on several analyses in this area. One paper examines the relationship of baseline reports of knee pain and abnormal x-ray findings to various outcomes observed in the followup survey. In other analyses Mr. Everett is studying the relationship between self-reported and measured weight, and weight history as a predictor of various outcomes. Mr. Everett and Ms. Pollard have worked with Dr. Huntley and others on the analysis of baseline measures of blood pressure and outcomes in the NHANES Followup.

In FY 1986 the Survey of the Last Days of Life (AG-2-2137) has continued to progress toward the production of meaningful results. The contractor, DMH Associates of New York City, has recently completed the fieldwork of interviewing the next-of-kin for a sample of 1,500 elderly decedents in Fairfield County, Connecticut. The response rate for the interview survey stands at 82 percent, a quite acceptable figure, considering the sensitive nature of the study. Additional data were collected for each individual in the sample who was hospitalized or placed in a nursing home up to 3 months before the time of death. These data include use of pain medication and the method of administration and nature and costs (where possible) of services received in the facility. The data are currently being edited and entered into the computer for analysis to begin in the fall. Dr. Brock has been invited to present the first descriptive data to a conference on death and dying at the University of Hartford in November. He, Mr. Foley, and Dr. White will be collaborating on additional analyses in late fall and into the winter. Dr. Robert Buchanan, a Robert Wood Johnson Foundation Fellow working with Dr. Cartwright, will be conducting a series of analyses of data from this study involving the economic variables collected.

Progress continues on two other data collection efforts in which the Biometry Office has provided support. First, the National Mortality Followback Survey went into the field with its primary data collection effort in January 1986. Dr. Brock has served as a member of the interagency consulting group for this survey since the planning for it began. This study, supported by an interagency agreement with NCHS (AG-5-0057) is collecting data on health care in the last year of life, lifestyle factors and the risk of "premature" death, socioeconomic differentials in mortality, and the reliability of demographic data recorded on the death certificate. The similarity between this study and the Last Days of Life study offers opportunities for a number of comparative analyses. Data collection efforts will continue through calendar year 1986. We anticipate an add-on to the agreement to support quality control of data collection. The other survey we have supported is the 1985 National Nursing Home Survey (AG-5-0062) which we also supported in its developmental stage. Fieldwork for this survey is now complete and we await the release of a clean data tape for analysis. The new data will allow the further examination of trends in nursing home utilization and provide answers to numerous questions regarding characteristics of nursing homes, their residents, and staff.

We continue our interests in developing trends in national mortality and morbidity statistics. Dr. Brock made a presentation on this topic to the National Association of Counties meeting in Atlanta in November 1985. He has recently collaborated with Dr. Jacob Brody, former Associate Director of EDBP, and Dr. Williams in the writing of an article which updates previously published chapters on epidemiologic and statistical characteristics of the elderly population based on national mortality data and morbidity data from a variety of sources. This article will be published in the Annual Review of Public Health in 1987. In addition, Dr. Brock participated in another review of geriatric epidemiology with Dr. White (see Epidemiology Office report). A third chapter is being prepared this fall in collaboration with Dr. Guralnik and Dr. Brody.

Finally, we are proposing to begin once again on a small effort to study climatic extremes and mortality, since the project in FY 1986 was postponed because of lack of funds.

Methodologic development continues to be a major concern of the Biometry Office. In FY 1986 we entered into an interagency agreement with NICHD to support a research contract with Research Triangle Institute for development of methods of multiple linear regression analysis appropriate for data derived from complex sample surveys such as the NHANES and the Yale and Duke EPESE surveys. This project will take the form of improved statistical models for such analyses and applications to relevant data sets along with computer software for implementing the improved procedures. The contractors are currently working on the development of the methods, and we will soon be working with them on the application to relevant NHANES data sets.

A second area of methodologic interest is the effects of missing responses on the data from the EPESE baseline survey. Dr. Brock has made a presentation to the American Statistical Association describing statistical models which identify patterns in the missing data. Further work is indicated to study the relationship and dependencies in missing data for several questions related to a single subject. For example, how does a missing value from the CES-D depression scale relate to those questions in the scale for which answers are complete? Perhaps more important are similar questions concerning missing items in the three physical functioning scales (Activities of Daily Living, Rosow, and Nagi).

The May 1986 meeting of the EDB Ad Hoc Scientific Advisory Committee pointed up the need for new ways of dealing with the analysis of measures of change in a variety of characteristics being measured in EPESE and NHANES in particular. We anticipate that, as time permits in FY 1987, we will continue to seek and evaluate appropriate methodologies for analysis of change.

Research Highlights, FY 1986

- Analysis of the first 2 years of EPESE mortality surveillance data revealed a strong, consistent predictive effect of baseline measures of physical functioning on the 2-year mortality rate in the three original EPESE locations. The results held up for both the Rosow-Breslau items and the modified Katz Activities of Daily Living (ADL) scales when the analysis was controlled for age and sex of the respondent. Additionally, whether the respondent answered for himself or whether a proxy respondent was required was an important variable in predicting the 2-year mortality experience.

- Two-year incidence rates of nursing home episodes were analyzed for the East Boston, New Haven, and Iowa EPESE centers. Results showed comparable rates between New Haven and Iowa, but much lower rates in East Boston, about one-half the rates in the other two locations. The hypothesis is that the differences may be due to the widespread use of

the "East Boston Home Care Program" in that community. Further evaluation of these data is continuing.

- Changes in physical functioning scores obtained in the EPESE Baseline and in each of the first two Followup Surveys have been analyzed. Substantial changes have occurred in the baseline measures for these populations, with some individuals showing improvement on a yearly basis while others have shown a decline. As noted above, reduced physical functioning has been shown to predict higher mortality in these cohorts over a 2-year period.

- A study has been conducted to determine characteristics of ready and reluctant participants and nonparticipants in the East Boston EPESE population. Age and living arrangements were seen to be predictive of participation in the EPESE baseline survey. That is, older individuals and persons living with other refusers were more likely to refuse to participate. No differences were observed in participation rates by sex. Further, no differences were observed in one-year mortality rates (for calendar year 1984) for participants and nonparticipants. Further evaluation of the data is continuing.

- As measured in the baseline survey data from the NHANES I, a potential relationship has been observed between decreasing hearing ability and lower bone mass as measured by baseline survey x-rays, as well as lower dietary vitamin D intake. These preliminary results require further research to fully characterize the nature of the relationship.

CONTRACT

Name and Number: DMH ASSOCIATES, INC. (N01-AG-2-2137)

Title: Survey of the Last Days of Life

Date Contract Initiated: September 30, 1982

Total Cost of Contract: $26,526

Objectives: The purpose of this project is to collect descriptive data on the last days of life for a community sample of persons age 65 and older whose deaths occurred in a one-year period. In addition to providing specific data on basic events and circumstances surrounding death, the study will provide lifetime prevalence data for a set of conditions related to, but not necessarily causing death. The new knowledge gained from this study will be extremely valuable in relieving the burden of anxiety on family, friends of the dying person, and to providers of care.

Methods Employed: A sample of death certificates will be selected over a period of one year in Fairfield County, Connecticut. Retrospective information concerning the decedent's last days of life will be obtained in a face-to-face interview with an informant identified from the information contained on the death certificate. Followup information will be obtained from medical sources identified by the informant for those cases in which it is appropriate.

Current Status/Major Findings: Fieldwork of interviewing the next-of-kin for a sample of 1,500 elderly decedents in Fairfield County, Connecticut is complete.

Significance to Biomedical Research: A considerable body of literature exists in the geriatric and psychological fields as well as in the lay press about dying. Yet specific data about basic events associated with dying are lacking --such as who dies peacefully in his/her sleep, who dies in great pain, what persons are present at the time of death, who dies after a long illness with full awareness of his impending demise, and who dies suddenly with no warning. Further, the proportion of the dying who need and actually receive pain medication is unknown. The study will provide an opportunity to obtain epidemiological data on the numbers of persons affected by the major health conditions that confront the dying elderly as well as the lifetime likelihood of certain events and conditions such as blindness, deafness, dementia, hip fracture, and others.

Proposed Course: The data are currently being edited and entered into the computer for analysis to begin in the fall. The project officer has been invited to present the first descriptive data to a conference on death and dying at the University of Hartford in November. Other staff members will be collaborating on additional analyses in late fall and into the winter. Staff working with the Demography and Economics Office will be conducting a series of analyses of data from this study involving the economic variables collected.

Publication: Brock, D.B. and Foley, D.J. A survey of the last days of life: Methodology considerations and pretest results. In Proceedings of the American Statistical Association, Social Statistics Section. Wash., D.C., 1986, pp. 316-21.

DEPARTMENT OF HEALTH AND HUMAN SERVICES - PUBLIC HEALTH SERVICE **NOTICE OF INTRAMURAL RESEARCH PROJECT**	PROJECT NUMBER Z01 AG 06050 03 EDBP

PERIOD COVERED
October 1, 1985 to September 30, 1986

TITLE OF PROJECT *(80 characters or less. Title must fit on one line between the borders.)*
Pretesting of the 1984 National Nursing Home Survey

PRINCIPAL INVESTIGATOR *(List other professional personnel below the Principal Investigator.) (Name, title, laboratory, and institute affiliation)*

Daniel J. Foley, EDBP, NIA
W. Edward Bacon, Ph.D., Director, Division of Health Care Statistics, NCHS

COOPERATING UNITS *(if any)*

National Center for Health Statistics

LAB/BRANCH
Biometry Office

SECTION
Epidemiology, Demography, and Biometry Program

INSTITUTE AND LOCATION
NIA, NIH, Bethesda, MD 20892

TOTAL MAN-YEARS:	PROFESSIONAL:	OTHER:

CHECK APPROPRIATE BOX(ES)
☑ (a) Human subjects ☐ (b) Human tissues ☐ (c) Neither
☐ (a1) Minors
☑ (a2) Interviews

SUMMARY OF WORK *(Use standard unreduced type. Do not exceed the space provided.)*

This interagency agreement between NIA and NCHS covers the cost of work to be done by NCHS in developing and implementing survey instruments and procedures for the 1985 National Nursing Home Survey. This agreement is to reimburse the Center for costs related to the collection of information on the Next of Kin Component to be used to describe the nursing home utilization patterns of an admissions cohort. All necessary clearance and sampling procedures will be developed by NCHS; all data collection and followup will be performed by a contractor under the direction of NCHS. Fieldwork for this survey is now complete and we await the release of a clean data tape for analysis. The new data will allow the further examination of trends in nursing home utilization and provide answers to numerous questions regarding characteristics of nursing homes, their residents, and staff.

DEPARTMENT OF HEALTH AND HUMAN SERVICES - PUBLIC HEALTH SERVICE

NOTICE OF INTRAMURAL RESEARCH PROJECT

PROJECT NUMBER
Z01 AG 06060 02 EDBP

PERIOD COVERED
October 1, 1985 to September 30, 1986

TITLE OF PROJECT *(80 characters or less. Title must fit on one line between the borders.)*
National Mortality Followback Survey

PRINCIPAL INVESTIGATOR *(List other professional personnel below the Principal Investigator.) (Name, title, laboratory, and institute affiliation)*

Dwight B. Brock, Ph.D., Chief, Biometry Office, EDBP, NIA

COOPERATING UNITS *(if any)*

National Center for Health Statistics

LAB/BRANCH
Biometry Office

SECTION
Epidemiology, Demography, and Biometry Program

INSTITUTE AND LOCATION
NIA, NIH, Bethesda, MD 20892

TOTAL MAN-YEARS:	PROFESSIONAL:	OTHER:

CHECK APPROPRIATE BOX(ES)
☐ (a) Human subjects ☐ (b) Human tissues ☑ (c) Neither
  ☐ (a1) Minors
  ☐ (a2) Interviews

SUMMARY OF WORK *(Use standard unreduced type. Do not exceed the space provided.)*

This survey will provide information on the characteristics of decedents and on the circumstances associated with their deaths that would supplement existing information on the death certificate. Specific areas to be studied include socioeconomic differentials in mortality, risk factors associated with what NCHS refers to as "premature" death, health care in the last year of life, and reliability of certain items reported on the death certificate. Through this interagency agreement NIA would be providing support to enrich the NCHS survey in those areas of importance to NIA research goals. Specifically, we are interested in obtaining national data concerning those characteristics of elderly decedents related to cognition, and the use of health care in the last year of life. A nationally representative sample of deaths could provide much needed data on the proportion of decedents showing signs of cognitive impairment, or decedents who were reported by their proxies to have been diagnosed by a physician to have had Alzheimer's disease or other dementing illness. This would provide better information than has been previously available on the relationship between dementing illness, cause of death and associated risk factors. In addition, these data will complement and enhance community-level data on similar topics being collected for NIA in the Survey of the Last Days of Life. Data collection efforts will continue through calendar year 1986. We anticipate an add-on to the agreement to support quality control of data collection.

DEPARTMENT OF HEALTH AND HUMAN SERVICES - PUBLIC HEALTH SERVICE

NOTICE OF INTRAMURAL RESEARCH PROJECT

PROJECT NUMBER
Z01 AG 06070 01 EDBP

PERIOD COVERED
October 1, 1985 to September 30, 1986

TITLE OF PROJECT *(80 characters or less. Title must fit on one line between the borders.)*
Multiple Linear Regression Analysis

PRINCIPAL INVESTIGATOR *(List other professional personnel below the Principal Investigator.) (Name, title, laboratory, and institute affiliation)*

Dwight B. Brock, Ph.D., Chief, Biometry Office, EDBP, NIA
Barry I. Graubard, M.S., Mathematical Statistician, EBRP, NICHD

COOPERATING UNITS *(if any)*

National Institute of Child Health and Human Development

LAB/BRANCH
Biometry Office

SECTION
Epidemiology, Demography, and Biometry Program

INSTITUTE AND LOCATION
NIA, NIH, Bethesda, MD 20892

TOTAL MAN-YEARS	PROFESSIONAL	OTHER:

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☐ (a) Human subjects ☐ (b) Human tissues ☑ (c) Neither
  ☐ (a1) Minors
  ☐ (a2) Interviews

SUMMARY OF WORK *(Use standard unreduced type. Do not exceed the space provided.)*

The National Health and Nutrition Examination Survey (NHANES) I and its Followup form an integral part of the NIA EDB scientific data base. More than 100 different analyses are planned by EDB and its collaborators. To make appropriate use of these data in regression analyses, adjustments must be made in usual regression techniques because the data from these complex samples do not meet the assumptions required by ordinary regression analysis.

The purpose of the project is to study and develop statistical methodology for multiple linear regression models that can be appropriately applied to the NHANES. The NIA entered into an agreement with NICHD for the purpose of expanding the scope of the contract with the Research Triangle Institute to develop statistical methodology for multiple linear regression models that can be appropriately applied to data from the NHANES and its Followup Survey.

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